इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 1833 (1980): Specification for Diazinon, Technical [FAD 1: Pesticides and Pesticides Residue Analysis]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

Indian Standard

SPECIFICATION FOR DIAZINON, TECHNICAL

(*First Revision*)

First Reprint MAY 1990

UDC 632.951 DIAZINON

© *Copyright* 1981

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *March* 1981

Indian Standard

SPECIFICATION FOR DIAZINON, TECHNICAL

(First Revision)

Pest Control Sectional Committee, AFCDC 6

Chairman	*Representing*
Dr K. D. Paharia	Directorate of Plant Protection, Quarantine & Storage (Ministry of Agriculture), Faridabad
Members	
Dr N. S. Agarwal	Ministry of Agriculture (Department of Food)
Dr K. Krishnamurthy (*Alternate*)	
Dr H. L. Bami	Central Forensic Science Laboratory (Central Bureau of Investigation), New Delhi
Dr B. Banerjee	Tea Research Association, Calcutta
Dr G. Satyanarayana (*Alternate*)	
Dr N. K. Basu	The Alkali & Chemical Corporation of India Limited, Calcutta
Shri S. R. Nene (*Alternate*)	
Dr A. K. Bhatnagar	Hindustan Insecticides Limited, New Delhi
Shri C. C. Abraham (*Alternate*)	
Dr S. S. Chadha	Pesticides Association of India, New Delhi
Chief Plant Protection Officer	Department of Agriculture, Government of Maharashtra, Bombay
Chemist Incharge, Insecticides Testing Laboratory (*Alternate*)	
Shri V. G. Deshpande	Ciba-Geigy of India Limited, Bombay
Shri E. A. Almeida (*Alternate*)	
Shri Om P. Dhamija	Export Inspection Council of India, New Delhi
Shri P. P. Ranga Rao (*Alternate*)	
Dr M. S. Dhatt	National Malaria Eradication Programme, Delhi
Director of Agriculture	Department of Agriculture, Government of Uttar Pradesh, Lucknow
Deputy Director (Plant Protection) (*Alternate*)	
Shri V. Dorairaj	Plastic Containers Sectional Committee, MCPD 11 (ISI)

(*Continued on page* 2)

© *Copyright* 1981

BUREAU OF INDIAN STANDARDS

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(*Continued from page* 1)

Members	*Representing*
Drugs Controller (India)	Indian Pharmacopoeia Committee (Ministry of Health and Family Welfare), New Delhi
Shri M. Ravikant (*Alternate*)	
Shri G. D. Gokhale	Bombay Chemicals Private Limited, Bombay
Shri V. V. Ketkar (*Alternate*)	
Shri D. R. Gupta	Central Revenues Control Laboratory (Ministry of Finance), New Delhi
Shri S. Krishnamurthy (*Alternate*)	
Shri D. K. Jain	Punjab United Pesticides and Chemicals Limited, Chandigarh
Joint Director of Agriculture (Development & ICP)	Department of Agriculture, Government of Karnataka
Deputy Director of Agriculture (Plant Protection) (*Alternate*)	
Dr M. G. Jotwani	Entomology Division, Indian Agricultural Research Institute (ICAR), New Delhi
Dr R. L. Kalra	Punjab Agricultural University, Ludhiana
Dr R. P. Chawla (*Alternate*)	
Dr Kalyan Singh	Chander Sekhar Azad University of Agriculture & Technology, Kanpur
Dr Krishan Singh	Indian Institute of Sugarcane Research (ICAR), Lucknow
Dr S. C. Srivastava (*Alternate*)	
Shri S. G. Krishnan	National Organic Chemical Industries Limited, Bombay
Dr J. S. Verma (*Alternate*)	
Dr V. Lakshminarayana	Directorate of Plant Protection, Quarantine & Storage (Ministry of Agriculture), Faridabad
Shri V. C. Bhargava (*Alternate*)	
Shri S. K. Luthra	Directorate General of Technical Development, New Delhi
Shri S. C. Bajaj (*Alternate*)	
Dr J. Madhusudhan Rao	Regional Research Laboratory (CSIR), Hyderabad
Dr J. C. Majumdar	BASF India Limited, New Delhi
Dr B. P. Chandrasekhar (*Alternate*)	
Shri S. K. Majumdar	Central Food Technological Research Institute (CSIR), Mysore
Shri M. Muthu (*Alternate*)	
Shri K. S. Mehta	Bharat Pulverising Mills Private Limited, Bombay
Shri S. Chatterji (*Alternate*)	
Shri L. S. Mirle	Agromore Limited, Bangalore
Shri J. M. Modi	Pesticides Formulators Association of India (S. S. I.), Bombay
Dr S. R. Barooah (*Alternate*)	
Dr A. L. Mookerjee	Cyanamid India Limited, Bombay
Shri J. P. Parikh (*Alternate*)	
Dr S. K. Mukerjee	Agricultural Chemicals Division, Indian Agricultural Research Institute (ICAR), New Delhi
Dr N. K. Roy (*Alternate*)	

(*Continued on page* 10)

Indian Standard

SPECIFICATION FOR DIAZINON, TECHNICAL

(First Revision)

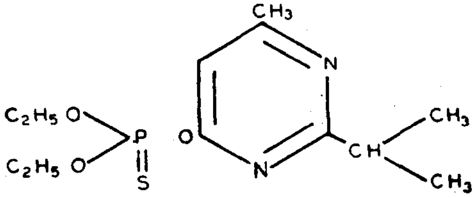
0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 28 October 1980, after the draft finalized by the Pest Control Sectional Committee had been approved by the Agricultural and Food Products Division Council and the Chemical Division Council.

0.2 Diazinon, technical is used in the preparation of formulations required for the control of insects in the field of agriculture and public health.

0.3 This standard was first issued in 1961. It is being revised now to align its requirements with those laid by Central Insecticides Board. Opportunity has been taken to give references of testing procedures to IS : 6940-1973*. An additional test method for estimating active ingredient has also been incorporated.

0.4 Diazinon is the accepted common name by the International Organization for Standardization (ISO) for *OO*-diethyl *O*-(2-isopropyl-6-methyl-4-pyrimidinyl) phosphorothionate or diethyl-2-isopropyl-6-methyl-4-pyrimidinyl phosphorothionate. The empirical and structural formulae and the molecular mass of diazinon are as indicated below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_{12}H_{21}N_2O_3PS$		304·4

---

*Methods of tests for pesticides and their formulations.

0.5 In the preparation of this standard due consideration has been given to the provisions of the Insecticides Act, 1968 and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for diazinon, technical.

2. REQUIREMENTS

2.1 Description — The material shall be in the form of a dark liquid, free from extraneous impurities or added modifying agents.

2.2 The material shall also comply with the requirements given in Table 1.

3. PACKING AND MARKING

3.1 Packing — The material shall be packed as per requirements given in IS : 8190 (Part II)-1980†.

3.2 Marking — The containers shall bear legibly and indelibly the following information in addition to any other information required under the Insecticides Act and Rules:

a) Name of the material;
b) Name of the manufacturer;
c) Date of manufacture;
d) Batch number;
e) Net volume of contents;
f) Diazinon contents, percent (*m/m*); and
g) A minimum cautionary notice as worded in the Insecticides Act and Rules.

---

*Rules for rounding off numerical values (*revised*).

†Requirements for packing of pesticides: Part II Liquid pesticides (*first revision*).

TABLE 1 REQUIREMENTS FOR DIAZINON, TECHNICAL

(*Clauses* 2.2 *and* 5.1)

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST, REF TO	
			Appendix of this Standard	Cl No. of IS : 6940-1973*
(1)	(2)	(3)	(4)	(5)
i)	Diazinon content, percent by mass, *Min*	95·0	A	—
ii)	Moisture content, percent by mass, *Max*	0·1	—	4
iii)	Material insoluble in acetone, percent by mass, *Max*	0·5	—	9
iv)	Acidity (as H_2SO_4), percent by mass, *Max*	0·3	—	11.3.2

*Methods of tests for pesticides and their formulations.

3.2.1 Each container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

4. SAMPLING

4.1 Representative samples of the material shall be drawn as prescribed in 'Indian Standard methods for sampling of pesticides and their formulations' (*under preparation*).

NOTE — Till such time the standard under preparation is published, samples shall be drawn as agreed to between the concerned parties.

5. TESTS

5.1 Tests shall be carried out by the methods referred to in col 4 and 5 of Table 1.

5.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

APPENDIX A

[*Table* 1, *Item* (i)]

DETERMINATION OF DIAZINON CONTENT

A-0. GENERAL

A-0.1 Either of the two methods, namely, Column Chromatography or Gas Chromatography may be used for the determination of diazinon content. However, in case of dispute Column chromatography shall be the referee method.

A-1. COLUMN CHROMATOGRAPHY METHOD

A-1.1 Principle — The basic by-products of diazinon are separated by absorption in a column packed with diatonaceous silica filtering aid impregnated with 3 N sulphuric acid. Diazinon is then determined in the eluate by titration with perchloric acid.

A-1.2 Apparatus

A-1.2.1 *Chromatographic Column* — 250 mm in length and 21-22 mm in internal diameter, fitted with a glass or teflon stopcock and a sintered disc, and equipped to operate under pressure.

A-1.2.2 *Steel Tamping Rod* — With a perforated disc to fit loosely inside the chromatography column.

A-1.3 Reagents

A-1.3.1 *Standardized 0·1 N Perchloric Acid in Glacial Acetic Acid* — Dilute 73 g of 70 percent perchloric acid with 124·1 g of acetic anhydride and made to 5 litres with glacial acetic acid. If the acetic acid used is not anhydrous, a corresponding larger volume of acetic anhydride will be required, equivalent to the total water content of the other two reagents.

---

*Specification for water for general laboratory use (*second revision*).

A-1.3.2 *Standardization of Perchloric Acid* — Standardize by dissolving 0·2 g of anhydrous sodium carbonate, accurately weighed, in 50 ml of glacial acetic acid and titrate this solution with perchloric acid solution, using 1 percent naphthol-1-benzein as indicator; 0·200 g of sodium carbonate corresponds to 37·73 ml of 0·1 N perchloric acid.

A-1.4 Procedure

A-1.4.1 *Preparation of Chromatographic Column* — Weigh 25 g of diatomaceous silica filtering aid into the mixing bowl of a suitable mixer. Add slowly 15 ml of 3 N sulphuric acid while mixing. Mixing should be continued until the powder is homogeneous. Add enough light petroleum (40-60°C bp) to the diatomaceous silica filtering aid mixture to cover the paste with solvent, stirring with a porcelain spatula till the slurry is ready for packing into the column. Pour into the dry column light petroleum to half of its height. Tamp a glass wool plug into position above sintered glass disc with the help of the tamping rod. Add portions of the slurry to the column through the funnel placed on the column and tamp each portion gently with the tamping rod until the column is two thirds full. For homogeneous packing, stir the slurry with glass rod to eliminate all air bubbles. Apply pressure, if necessary and press out excess of light petroleum taking care that diatomaceous silica filtering aid is just covered at all times. Continue adding slurry and pressing until the height of the packed column is about 15 cm. Place a glass wool plug of about 5 mm on top of the packed column. Light petroleum passes out dropwise in properly packed columns.

A-1.4.2 *Preparation of Sample Solution* — Weigh accurately 0·5 to 0·7 g of the sample into a 25 ml flask and rinse it with 5 to 10 ml of light petroleum on to the column.

A-1.4.3 *Operation of the Column* — Open the stop cock and allow the level to sink to about 1 to 3 mm above the packing. Rinse the flask twice with 5 ml and twice with 10 ml of light petroleum quantitatively. Pour each washing down the side of the column so as to wash the sample into the packing and allow it to penetrate to a level of 1 to 3 mm above the packing before adding the next portion. Add 30 ml of light petroleum. Adjust the dropping funnel to the top of the column and elute with 200 ml of light petroleum. Collect the elute in a 500-ml flask with a ground glass joint and distil off the solvent. Dissolve the residue in 50 ml of glacial acetic acid, connect to a reflux condenser, and boil for 15 minutes. Cool, rinse with glacial acetic acid into a beaker and titrate with 0·1 N perchloric acid in a glacial acetic acid using 1 percent solution of naphthol-1-benzein as indicator, until the solution becomes dark green. Alternatively, the titration may be done potentiometrically.

A-1.5 Calculation

$$\text{Diazinon content, percent by mass} = \frac{V \times 3{\cdot}044}{M}$$

where

V = volume in ml, of 0·1 N perchloric acid used; and
M = mass in g, of the material taken for the test.

A-2. GAS CHROMATOGRAPHIC METHOD

A-2.1 Principle — The method consists of injecting a sample in the gas chromatograph and determining its peak area. The area under the peak is proportional to the mass of the sample. By comparison of this area with that of the standard reference material of known purity, the percentage purity of the sample is determined.

A-2.2 Apparatus

A-2.2.1 *Gas Chromatograph* — Equipped with a recorder and a disc integrator and fulfilling the following conditions:

Column length	1 200 mm
Detector	Thermal conductivity (TCD)
Column temperature	170°C
Injection port temperature	200°C
Detector temperature	200°C
Carrier gas	Hydrogen or Nitrogen or Helium
Carrier gas pressure	1 to 1·5 kg/cm^2

A-2.2.2 *Column* — Consisting of 1 200 mm glass column of 0·63 mm outer diameter packed with 5 percent SE-30 on 60-80 mesh chromasorb *W*, *AW* or *DMCS*.

A-2.2.3 *Micro-syringe* — 50 µl capacity.

A-2.3 Reagents

A-2.3.1 *Acetone*

A-2.4 Procedure

A-2.4.1 *Preparation of Standard* — Weigh 0·1 g of the standard diazinon into a 10 ml volumetric flask and dissolve in acetone to the mark.

A-2.4.2 *Preparation of Sample* — Weigh a portion of sample equivalent to 0·1 g diazinon into a 10 ml volumetric flask and dissolve in acetone to the mark. Allow to settle, filter or centrifuge if necessary taking precautions to prevent evaporation.

A-2.4.3 *Analysis of Sample* — Check the chromatograph for thermal and flow equilibrium. Inject 15 to 25 µl of standard solution followed by sample solution alternatively at least thrice. Measure the peak area with reference to the sample as well as standard and calculate diazinon content in the sample.

A-2.5 Calculation

$$\text{Diazinon content, percent by mass} = \frac{A_s \times M \times P}{A_{ref} \times M_1}$$

where

A_s = area of sample;

M = mass, in g, of standard injected;

P = purity of standard;

A_{ref} = area of standard reference; and

M_1 = mass, in g, of sample injected.

(*Continued from page* 2)

Members	*Representing*
Shri K. R. Narayana Rao	Food Corporation of India, New Delhi
Shrimati K. K. M. Bhavnani (*Alternate*)	
Shri I. Narsareddy	Department of Agriculture, Government of Andhra Pradesh, Hyderabad
Shri C. Dharma Rao (*Alternate*)	
Dr V. N. Nigam	Ministry of Defence (DGI)
Shri P. N. Agrawal (*Alternate*)	
Shri M. M. Padalia	Department of Agriculture, Government of Gujarat, Ahmadabad
Shri R. G. Jadeja (*Alternate*)	
Dr S. Y. Pandit	Bayer (India) Limited, Bombay
Shri D. N. Nakhate (*Alternate*)	
Shri C. F. Paul	Ministry of Defence (R & D)
Shri M. G. Chatterjee (*Alternate*)	
Dr P. S. Phadke	Sandoz (India) Limited, Thane
Shri A. V. Natu (*Alternate*)	
Shri S. M. Pradhan	Metal Containers Sectional Committee, MCPD 12 (ISI)
Shri Y. A. Pradhan	Rallis India Limited, Bombay
Dr Z. J. Kapadia (*Alternate*)	
Shri D. N. V. Rao	Tata Chemicals Limited, Mithapur
Shri C. Neelkanthan (*Alternate*)	
Dr K. K. Saxena	Indofil Chemicals Limited, Bombay
Shri G. Natarajan (*Alternate*)	
Secretary	Central Insecticides Board, Directorate of Plant Protection, Quarantine & Storage (Ministry of Agriculture), Faridabad
Dr R. C. Gupta (*Alternate*)	
AVM J. K. Sehgal	Directorate General, Armed Forces Medical Services, Ministry of Defence
Lt-Col P. S. Gill (*Alternate*)	
Shri A. C. Shroff	Excel Industries Limited, Bombay
Shri P. V. Kango (*Alternate*)	
Dr K. S. Singh	Indian Veterinary Research Institute (ICAR), Izatnagar
Shri S. C. Srivastava (*Alternate*)	
Shri N. S. Venkataraman	Department of Agriculture, Government of Tamil Nadu, Madras
Dr P. R. Venkateswaran	Union Carbide (India) Limited, New Delhi
Dr K. N. Shrivastava (*Alternate*)	
Shri E. R. Viccajee	Paper and Flexible Packaging Sectional Committee, MCPD 14 (ISI)
Shri N. G. Wagle	Pest Control (India) Private Limited, Bombay
Shri M. R. Bajikar (*Alternate*)	
Dr B. L. Wattal	National Institute of Communicable Diseases, Delhi
Shri G. C. Joshi (*Alternate*)	
Shri T. Purnanandam, Director (Agri & Food)	Director General, ISI (*Ex-officio Member*)

Secretary
Shri Lajinder Singh
Assistant Director (Agri & Food), ISI

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002
Telephones: 331 01 31, 331 13 75
Telegrams: Manaksanstha
(Common to all Offices)

Regional Offices:

		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	331 01 31 331 13 75
*Eastern	: 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola, CALCUTTA 700054	36 24 99
Northern	: SCO 445-446, Sector 35-C, CHANDIGARH 160036	2 18 43 3 16 41
Southern	: C. I. T. Campus, MADRAS 600113	41 24 42 41 25 19 41 29 16
†Western	: Manakalaya, E9 MIDC, Marol, Andheri (East), BOMBAY 400093	6 32 92 95

Branch Offices:

'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMADABAD 380001	2 63 48 2 63 49
‡Peenya Industrial Area 1st Stage, Bangalore Tumkur Road BANGALORE 560058	38 49 55 38 49 56
Gangotri Complex, 5th Floor, Bhadbhada Road, T. T. Nagar, BHOPAL 462003	6 67 16
Plot No. 82/83, Lewis Road, BHUBANESHWAR 751002	5 36 27
53/5, Ward No. 29, R.G. Barua Road, 5th Byelane, GUWAHATI 781003	3 31 77
5-8-56C L. N. Gupta Marg (Nampally Station Road), HYDERABAD 500001	23 10 83
R14 Yudhister Marg, C Scheme, JAIPUR 302005	6 34 71 6 98 32
117/418 B Sarvodaya Nagar, KANPUR 208005	21 68 76 21 82 92
Patliputra Industrial Estate, PATNA 800013	6 23 05
T.C. No. 14/1421, University P.O., Palayam TRIVANDRUM 695035	6 21 04 6 21 17

Inspection Offices (With Sale Point):

Pushpanjali, First Floor, 205-A West High Court Road, Shankar Nagar Square, NAGPUR 440010	2 51 71
Institution of Engineers (India) Building, 1332 Shivaji Nagar, PUNE 411005	5 24 35

---

*Sales Office in Calcutta is at 5 Chowringhee Approach, P. O. Princep Street, Calcutta 700072 — 27 68 00

†Sales Office in Bombay is at Novelty Chambers, Grant Road, Bombay 400007 — 89 65 28

‡Sales Office in Bangalore is at Unity Building, Narasimharaja Square, Bangalore 560002 — 22 36 71

Reprography Unit, BIS, New Delhi, India